



## Materials Engineering Branch

### TIP\*



No. 043 Proper Handling of Polymer Ingredients

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Proper mixing and handling of polymer ingredients is an absolute necessity to insure the quality of the cured product. Many formulations have a precisely balanced mix ratio to achieve some particular property in the finished product. Anything that might upset the ratio of the ingredients or "poison" them must be avoided whenever possible.

Therefore, inert, non-porous and clean implements and containers should be used to dispense, mix, measure, store, and apply polymer mixtures. Such common articles as paper cups and wood spatulas or stirring sticks that absorb the liquid ingredients should not be used. The best implements and containers to use are those made of glass, aluminum, stainless steel, Teflon, polyethylene, and polypropylene.

However, even though these materials may be acceptable for many uses, no one material is satisfactory for every case. Furthermore, containers and implements, even when new, must not be presumed to be clean until someone actually cleans them.

Another important aspect in the handling of polymer formulations is the measurement of the individual ingredients. It is very important to know if the ratio of the ingredients is based on weight or on volume measurements. In cases where one component of a mixture comprises only a minor portion of the total, it is important to be able to measure the minor constituent very accurately and to mix it in thoroughly.

In order to accomplish such measurements easily, the amount of liquid or solid to be mixed must be large enough so that the minor component can be measured accurately. The technique used to make the measurements must be capable of the required accuracy. For example, in one case, a balance with a 0.1-gram smallest division was being used to weigh out 0.5 gram of catalyst for a mixture where the ratio of resin to catalyst was 100:1. This was unacceptable. It is less expensive to waste excess polymer mix than to experience a failure due to improper handling or mixing of ingredients.